

THE UTILISATION ASPECTS
OF MEDICAL RESEARCH IN
THE NON-GOVERNMENT SECTOR
(a limited study)

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P A R T - I

Introduction :-

The establishment of a small medical research cadre many decades ago, is supposed to be the beginning of medical research in India on a very meagre scale. The establishment of a few institutions by the Central or the Provincial Governments was one early step towards progress in this direction. It is unnecessary to go into the details of development of a great number of official institutions in India, undertaking different aspects of medical research, during the last decade. This aspect has been covered by many official reports, including the latest report¹ of the Health Survey and Planning Committee 1962. No doubt there has been a progress in the creation of new institutions and reorganisation of the old, with a constant increase in the official expenditures on research during the plan periods. The old official organisation known as 'The Indian Research Fund Association' was reorganised as 'the Indian Council of Medical Research' in 1950, whose expenditure in 1961-62 on research enquiries only was Rs. 55,00,000. It has been a policy of the I.C.M.R. to strengthen medical research in the medical colleges in the country, and 30 medical colleges were taking part in research enquiries in 1961-62. Thus,

the medical research at the time of this report had much developed as compared with the period of the Bhore² Committee Report 1943, both in medical colleges and specialised institutions of medical research. It should be noted here that there is hardly any mention of any medical research in the non-official sector in any of these official reports.

Another point needs to be noted here. The history of medical research in many countries would show that fairly good share of the credit for advancement of medical research goes to non-medical scientists. This is but natural, when it is taken into consideration that the medical research leans heavily upon a number of scientific disciplines, such as physics, chemistry, biology, psychology and general technological developments. In view of this fact, the advance of medical research in the country would also depend on the participation of the scientists from these different disciplines in medical research.

The official reports so far do not appear to have taken into consideration these two important points in a comprehensive manner, which has been responsible for certain inevitable gaps in their review of medical research as well as the plans for future progress in this field.

The present limited study has, therefore, undertaken to show the extent of medical research in the non-official sectors as well as to find out the problems connected with the utilisation aspects of medical research, particularly with reference to the administrative aspects.

Brief Historical Reference:-

It will not be out of place to refer briefly to the development of research in the non-official sector in India. The scope of medical research should really cover all the different aspects of literary and experimental work. The experimental group may also be classified into fundamental and applied aspects, depending upon the nature of the problem tackled by the investigator concerned, although, quite often, one aspect leads to another and a clear demarcation may not be possible. The historical review of research, embracing all these aspects is unnecessary for the purpose of this report. It may broadly be mentioned that many scholars have put in a great labour in the field of medical research; according to individual interest,

both during the pre-British period and the British-regime in India.

In the literary field, the efforts of many European scholars, such as Prof. Hoernle and Dr. Julius Jolly³ have been outstanding. The efforts of many Indian scholars like Dr. Vaman Desai⁴ deserve particular mention in the field of both literary and experimental research. The great effort of one Indian prince Sarfoje Raje Bhonsle⁵ of Tanjore, which resulted in bringing up two big institutions under the titles "Saraswati Mahal" & "Dhanvantari Mahal" respectively, is a glorious example of both literary and experimental medical research in the 18th century. During the British period, many eminent botanists have taken a keen interest in the medicinal plants of India, whose efforts have been pioneer in the field. Many of these efforts, both by Indian and European scholars, were labours of love, either carried out through the financial supports from the Governments, rich enlightened princes, or sometimes on their own.

The necessity of this study :- With this background, in the country, it is necessary to find out in every field connected with medical research in the country,

whether the individuals or organisations exist, capable of contributing something substantial in the particular field in which the individual or organisation may be interested. It is also necessary to enquire if there are any attempts from the non-medical scientists in their own disciplines which might be useful for the advancement of knowledge in the field of medical research. Such an exhaustive enquiry should also cover the fields of Indian Systems of medicine.

The limits of this study :- The present study-project, however, is a very limited attempt in this direction. It tries to cover the non-official efforts in a small region, Bombay and Poona and a selected few institutions, which may be representative samples of such attempts.

The institutions have been selected from two points of view. One group belongs to the Pharmaceutical industry, which is entirely independent in the matter of finance. The second type of institutions have been organised by scientists and public men, owing to their own interests of work in the field. They are dependent for finance on different sources, like the Government bodies or patrons of public interests.

For the limited study, two prominent institutions have been selected from each group. They are as follows:-

Group (a) :- (1) CIBA Research Centre, Goregaon, Bombay.

(2) Unichem Laboratories, Bombay-26.

Group (b) :- (3) Medical Research Centre, Director S.A.E. Hakim, under the private Trust, Bombay.

(4) Drug Research Laboratory of the Indian Drugs Research Association, under a public registered Society meant purely for research, Poona.

The three institutions out of the four are located in Bombay and one in Poona. The institutions under group (b) are fully devoted to medical research without any counterpart of industry. They have to maintain themselves entirely, either on their own resources or Government grants. The Group (a) has its own resources and is naturally interested in more applied work.

Material and Methods :- Personal interviews were arranged with the heads of the different institutions to collect data. The tentative questionnaire was prepared to bring some uniformity in the collection of information under different heads. But free discussions took place on several subjects of mutual interest in a spirit of confidence. Out of the several research projects were usually chosen for exhaustive discussion in the pre-and-post-discovery stages. Enquiries were particularly directed to the different Administrative aspects, which had to be attended to or which proved as serious obs-

tacles in the way of progress. The Government - non-official-sector-relationship was also considered as a factor independently. The problem of patents and the approach to the problem by the investigators on one hand and the Government and the Industry on the other have been carefully considered. It must^{also} be noted that all the institutions gave a good co-operation in this study and efforts were made to understand the problems as they were, rather than trying to attribute any intentions or apportion any blames to any Govt. organisations or individuals.

Four case-histories are, therefore, recorded during this study, which form the data on which the further discussion is based. The case-histories have been carefully recorded and the statements made therein can be substantiated by documentary evidence to a great extent. In fact, most of the statements have been made as the results of discussion and the points mentioned in each case have been discussed in personal interviews. Thus, the statements are not likely to be exaggerations or misleading.

Performance classification adopted :- The useful criteria of performance, such as the published work at credit etc. have been felt as unnecessary, as it is not intended to co-relate expenditure and performance.

It was also not intended to evaluate the performance on the basis of its utility. Hence from the point of view of the utilisation aspects, directly or indirectly concerned with administration, classification of the work adopted is as under:-

- (1) General scope of work in which the investigator or the organisation is interested. Only the outline is given.
- (2) Any one item where the results are fruitful from the points of view of marketing either a new product related to pharmaceutical industry or medical practice.
- (3) Any technological advance, incidentally found, which might contribute to the betterment of the existing practice in medicine or product.

Fundamental & Applied Research :- From the point of view of the classification adopted for this study, the applied work of the institutions was considered as it affects directly the items mentioned under (2) and (3) in the previous paragraph.

The work related to foods and drugs is of such a nature that it is directly concerned with the utility aspects of research. The work on drugs is classified in two categories as (a) Synthetics; and (b) plant drugs. The entire procedure of attacking the problem

is usually not the same for the two categories mentioned. Simultaneously, the results also depend upon the field of work selected. Unless all these points are taken into consideration, the evaluation of the difficulties would be faulty. Thus, while remembering the very limited object of the present study, the general foundations are laid down for the fruitful extension of this work.

P A R T - II :

Case histories :- The case histories of the four institutions mentioned on page 4, are given in Part II.

GROUP (a) / Case No. 1 :

CIBA Research Centre, Goregaon, Bombay.

Director - Dr. T.R. Govindachari.

General background & interest :- The CIBA research centre has come into existence in 1962 with an object of doing pure research work in drugs. The centre is entirely financed by the CIBA Pharmaceutical Industry and as such entirely independent in the matter of finance. Dr. Govindachari, the Director of the Institute, is an eminent chemist and is naturally interested in the work in synthetic drugs. Several projects are in hand, such as hypotensive agents and anti-viral compounds. A very elaborate biological testing is being carried out on each and every compound, synthesised in the laboratory. The total annual expenditure of this centre is approximately estimated as about 50 to 60 lacs. The centre is also interested in the medicinal plants simultaneously and a general pharmacological screening of quite a few plants has been undertaken.

Fruitful projects :- The fruitful results are, however, being obtained by the centre in the field of synthetics. No scheme of this centre can suffer for want of economic resources. As such, the difficulties arising owing to the want of financial support to the work simply do not exist.

Pre-discovery period :- The chemical work carried out in this centre naturally requires import of a great number of chemicals. The import is approximately estimated worth about 2 lacs of rupees. In addition, import of new equipment and expenses for maintenance services amounts to be about Rs. 3 lacs every year. Foreign exchange release to the extent of about 5 lacs, a year will greatly facilitate the work. This is less than 10 percent of the total budget.

Post-discovery period :- Laboratory discovery of a drug leads to further exhaustive clinical trials. These clinical trials are usually undertaken with the help of the big hospital institutions in the country. They naturally take a very long time with the type of set-ups in India.

Even in the case of drugs clinically evaluated in other countries, the fresh clinical trials are required to be carried out in this country. The purpose

behind this requirement is obviously to examine the dosage levels suitable to this country as well as the side toxic-effects. This type of clinical work also takes a very long time in this country, owing to the type of clinical research facilities available at present.

The difficulties in carrying out the clinical trials were discussed. The possibility of undertaking the work of clinical evaluation of well tried drugs in the other countries with the help of full-time medical departments of medical colleges, was considered. The present system of undertaking this work through the machinery of the I.C.M.R. was also discussed. It appeared that the clinical research work can be expedited with some modifications necessary in channelising this work through the I.C.M.R. on the one hand and utilising the facilities of the full-time departments of the medical colleges on the other.

GROUP (a) / Case No. 2:

Unichem Laboratories, Bombay - 26.

Director - Shri Amrut V. Mody.

General Background & Interest :- Unichem laboratory is one wellknown manufacturing concern in Bombay. The industry has been developed by the efforts of Mr. Mody and his colleagues during the last 25 years. This is one of the rare Indian industry where the directors have an outlook of developing medical research, through the profits of the concern and have no hesitation on spending some amount according to their own resources on projects of medical research, likely to be fruitful. It is learnt that the directors have been spending a few lacs a year on several projects in the country, connected with medical research. They have a particular interest in indigeneous drugs, although they also support the work on synthetics, whenever needed. For example, they have supported the research work on the synthetics - Metaqualone under Dr. Gujaral with the fruitful result. They however, missed the bus afterwards and could not market the product, owing to some difficulties regarding the import of chemicals.

Fruitful project :- The project on the use of Berberine⁶ hydrochloride in Cholera is one of their most

successful project in medicinal plants. They were financing this work for the last 6 years or so in the different centres in India. The pharmacological work was carried out in Bombay, while the clinical work was organised in Calcutta. They must have spent about 1 to 2 lacs of rupees on this work and are now prepared to market its preparation.

Pre-discovery period : - The entire idea originated from the Director of the Unichem Laboratories, who persuaded the research scientist to undertake the scheme of this work and financed it continuously for the last so many years. The technical difficulties in the project could be overcome because of the ready financial support.

Post-discovery period :- The directors do not find much difficulty in marketing the product. They also do not find much difficulty in arranging the clinical trials of their products as they have already in practice the suggestion regarding the utilisation of full-time departments of medicine for the clinical work.

GROUP (b) / Case No. 3 :

Medical Research Centre.

249, Dadabhai Nowroji Road, Bombay-1.

Director :- Dr. S.A.E. Hakim.

General background and Interests :- Dr. Hakim has started this centre as early as 1950, owing to his own interest in medical research in general and drugs in particular. The centre was started with his own initiative and with very ^{meagre} resources. He has spent a few years of his own with Sir Dr. Edward Mellanby, the ^{wellknown} medical scientist in U.K.; Dr. Hakim was recommended for the post of the Director, C.D.R.I. by Dr. Mellanby, which he refused, owing to his own interests in doing the actual work, undisturbed by official and administrative business. The field of his work is mainly medicinal plants and here is an example, how the fundamental and applied research overlap each other.

The Fruitful Projects :- The project he has been handling for the last several years is on one important poisonous plant of India; "Argemone mexicana".⁷ He has carried out a good deal of work on the alkaloid "Sanguinarine" as it affects the ocular tension. He has established an entity of symptom-less glaucoma,

leading to blindness, owing to the ingestion of this poisonous alkaloid. The carcinogenic property of this alkaloid is also demonstrated by him.

This fundamental research naturally took a very long time. But this had led immediately to its applied aspect, as the seed of this plant contains about 40% of oil and the seed is easily obtainable, owing to the wide distribution of the plant in nature. He found that many edible oils are adulterated by the Argemone oil. He found that the adulteration has also reached in the manufacture of 'hydrogenated oils' which is highly consumed by the general public as a substitute for ghee. During this work, he naturally had to find out a new method and technique, which would be useful, for the detection of "Sanguinarine" even in small traces in the different edible oils. This work was naturally useful to the industry in India with a view to improve their product and make it free from this harmful alkaloid.

This technological advance would definitely be useful for the betterment of the product 'Vanaspatti', which is highly consumed by the public as well as many other edible oils, which may be adulterated by this oil.

Pre-discovery difficulties :- This investigation could

reach the stage mentioned above only because he pursued with enthusiasm and interest the problem in hand the posionous plant, irrespective of the difficulties, he faced.

The pre-discovery difficulties in the case of the non-official voluntary worker mainly centre round about the problem of finance.

Dr. Hakim applied to the Indian Council of Medical Research and tried to contact the then Director of I.C.M.R. to enable him to prosecute the work, without any effect. The investigator has completed his work, both fundamental and applied, depending entirely on his own resources, which partly come from the private trust, he has himself established from his ancestral property and the rest subscribed from his own earnings from his private practice. It will thus be seen that the research had to be carried out from the beginning to the end of this discovery, entirely on his personal resources without any financial support from the Government bodies, supposed to finance research projects of this kind.

Post-discovery difficulties :- Dr. Hakim brought his discovery to the notice of the public Health Authorities in the Government as well as the Bombay Municipal

Corporation, after first contacting the business magnets in the field and requesting them to improve their product. He also first demonstrated the evidence as to why they should take the steps immediately in the interest of public health.

However, the administrative difficulties in the way of the Government to enforce the new procedure for the betterment of the product in the presence of the 'Prevention of Food Adulteration Act' are not correctly understood. It is understood that the Municipal Commissioner of Bombay has now prosecuted the business magnets in the court of law.

GROUP (b) / Case No. 4 :

Drug Research Laboratory, Indian Drugs Research Association, 680 Shivajinagar, Poona-5.

Hon. Director : Dr. G.S. Pendse.

General background and interests :- The Association was started in the year 1943 and the work in connection with medical research in general and indigeneous drugs in particular was being organised with the co-operation of the different scientists, belonging to various scientific disciplines connected with medical research. The work on some indigeneous plants as well as on some drugs used in Ayurveda (Indian Systems of Medicine) was being organised. The Association started its own small laboratory in 1950 in a building built by public donations. Since then the institution has been developing its research work under the grants from the Govt. as well as the autonomous bodies such as I.C.M.R. or C.S.I.R. wherever available. Apart from the fundamental research, many applied problems on drugs have been tackled by the institution with interesting results. The association is a scientific registered society under the Societies Registration Act and the Trust Act with a regular constitution.

The Fruitful projects :- Two fruitful projects have been mentioned here instead of one, for the simple

reason that two different points emerge out of their study.

Project I :- *Spilanthus acmella*⁸ :- The insecticidal and fungicidal plants of India was one of the interest of the workers, owing to the difficulties of obtaining Pyrethrum from abroad. This work was undertaken to find out the plant with similar properties in India. *Spilanthus acmella* was found to possess the larvicidal property and hence it was intended to organise some extensive trials with the help of Government.

The economic Botanist to Government of Maharashtra, was acquainted with the work as an active member of the Association. The Malaria Control Department was also acquainted with the work. The large scale cultivation was undertaken by the help of the Agricultural College, Poona.

It was surprising to note that the then economic botanist had to resign his membership, owing to reasons unknown to the Association. The matter was then taken to the Government and then Minister of Health, ultimately issued an order to permit all the Govt. departments to co-operate with the work of the Association. It automatically came to an end for the simple reason that a far more effective chemical 'DDT' came in the market.

Project II :- Iron⁹ preparations used in the Indian Systems of Medicine :- The object of this enquiry was to find out whether the standard preparations of Iron in Indian Systems of Medicine are therapeutically useful. It was necessary during this work to consider the problem of standardisation of drugs used in I.S.M. and it was ultimately possible to establish that physical and chemical standards could be laid down and the genuine standard sample produced the clinical effect comparable to modern standard preparation of iron. This work was the beginning, of the movement for the development of Ayurvedic Pharmacopoeia for these drugs. But unfortunately this project brought the work directly in conflict with the existing state of affairs of a big trading group. The work was really intended to be useful to the industry. But the attitude of the industry, in general, was not congenial and sometimes even hostile to understand or to implement the scientific developments in the field.

Pre-discovery difficulties :- In both the projects mentioned above the work was carried out by the Scientists on their own initiative, with whatever meagre resources could be made available to them.

In the case of project I, the Minister concerned had to intervene for the mere co-operation required

by the scientists. In the case of project II, the administration could not give substantial support to enable the scientist to proceed with this important work of public interest. The work of standardisation research was ultimately interrupted for want of support from the State Government. The very meagre support given by the State Government was itself possible, only after persuading the Government in the matter for a couple of years. After the work was stopped under the State Govt. the matter was represented to the Central Ministry of Health, where also it was not possible to undertake the scheme of standardisation research work upto this date, in spite of the very sympathetic and helpful attitude of the Ministers concerned. In fact, Central Ministry of Health gave substantial assistance during the third plan period for the prosecution of the work of Medicinal Plants in India, but the institution was advised to withdraw the scheme of standardisation work and submit the scheme on medicinal plants only. The long history of struggle, merely to establish the standardisation research in the field of Ayurvedic drugs extends over a period of 20 years and it is not possible to go into

the details in a brief account of the case as this. It is enough to state that the trade interests were not congenial with development of this kind and the policy-makers as well as the administration were unable to overcome the difficulties created by the vested interests in the field. The scientific work in this matter was therefore, naturally obstructed, in spite of the sympathies of the policy-makers. Even assuming that a number of difficulties exist in the implementation of standards by law, it is not understood why it was not possible to help the continuation of the scientific work which would have resulted in the accumulation of a mass of data necessary to create scientific standards for these drugs.

The institution depends on Government grants to a great extent for the actual research work now. In spite of the submission of the budgets in time, the decisions are delayed to such an extent that the grants are at times, received in the late financial year. It then becomes impossible to spend the allotted amount for the allotted item and it also affects performance. The conditions like bonds (personal) are being imposed in addition.

The small import they need is also very difficult to obtain. It took about 2 years and more to obtain a small import licence of only ^{for} Rs. 3,000/-.

The solvents is a daily need in research. The licencing procedures are unnecessarily highly dilatory which affect performance.

Post-discovery difficulties :- The project I was concerned with the utility of the new discovery for public health. It should be remembered in this connection that the investigation and discoveries in plants may not be able to compete with the discoveries in synthetics. With the advent of D.D.T. as a larvicide, the plant larvicide immediately suffered a set-back. The question, therefore, of making the use of this discovery in commerce practically did not arise.

The project II was concerned with the application of the general technological advance in industry. It was found that the attitude of the industry was not congenial to the scientific progress. It was also found that the Government was unable to overcome the difficulties with a view to make progress in this direction.

Part III :

DISCUSSION:

The case-histories are discussed here on the basis of facts and experiences. The general administrative difficulties and broad recommendations based on facts follow at the end.

The four case-histories presented in this limited study-project, belong to two groups of institutions. One is connected with industry and the other consists of the purely non-official institutions conducted by scientific men as their own labour of love. It should be noted here, that to cover the full scope of medical research in this country, the study will have to be extended both in its scope and depth. With a view to realise the scope of the entire medical research in the country, the following categorisation may prove of great use.

Scope of Medical Research :- It has already been pointed out in the introduction that the scope of medical sciences in general will have to be realised before the full extent of medical research in the country can be grasped. It should be noted in this connection that many non-medical scientists in the field of biological sciences as well as physical sciences have helped in the progress of medical

research. The following categorisation may be found convenient for adoption in the future studies, to cover most of the work :-

Category A : Official Sectors :-

- (1) Under the Central Government directly under the different Ministries, such as Health or Education.
- (2) Under the Autonomous bodies sponsored by the Government such as I.C.M.R.; C.S.I.R.; Atomic Research Commission.
- (3) Under the financial support of the foreign Governments or their funds channelised through the Government, such as NIH or PL-480 Programmes.
- (4) Under the State Governments in the different States.

Category B : Non-Official & Semi-Official Sectors :-

- (1) University departments of Biology and Chemistry.
- (2) Non-official medical colleges under Corporations or other societies and Mission institutions.
- (3) Research centres sponsored by the Pharmaceutical Industries.
- (4) Non-official Scientific societies, Associations & Trusts.
- (5) Non-official individuals.

Survey of Total Contents :- From the point of view of the depth of medical research, all the work of these diverse interest groups may have to be classified according to the topics and disciplines of their own interest. Such classification could be presented as under :-

- (1) Contributions to Medical Research from the physical and chemical sciences.

- (2) Contributions from the biological scientists.
- (3) Contributions from the psychological and sociological groups including humanities.
- (4) Contributions from non-clinical subjects, such as Physiology, Pharmacology, Bacteriology etc.
- (5) Contributions from Indological and historical researches.

The studies should also include the Indian Systems of Medicine for two reasons. One of them is the substantial expenditures of the Government on this head. Secondly, the Indian system of medicine is believed to be on a different footing and more substantial foundation, than the many indigenous medical practices in different countries in and outside India, which were easily replaced by the extension of experimental medicine in those countries.

All these studies as listed above will ultimately lead to a correct appreciation of the general content of medical research in the country as well as its real depth.

From the point of view of utilisation aspects, a good deal of useful information is likely to come up in the different directions of applied interests, apart from the extent of studies of fundamental interests in the field. The full potentialities of the work of applied interest can then be explored together with the utilisation aspects of various projects.

The present study can now be seen as a very limited study on the background of the real scope of work in this direction. It covers only a few centres of applied interest in the category 'B' of non-official and semi-official sectors, which are mainly interested in the work on drugs.

Out of the four centres studied here, two belong to the group 3 in Category B and two belong to the group 4 in the same category. Thus, out of nine groups distributed in two Categories A & B, this limited study has covered only four research centres in the limited area of Poona and Bombay.

The inferences from the available data would therefore be necessarily tentative in nature, owing to the great limitations of the study, both in its scope and depth. However, inspite of these limitations, the study leads to certain inevitable conclusions, which would be proved to be thought-provoking and which would throw some light on the general policies of the different Government Set-ups.

Groups (a) :- The group (a) consists of two institutions CIBA and Unichem Laboratories in Bombay, which can be taken as a representative sample. Of the group 3 in Category B viz., "Research Centres, sponsored by pharmaceutical industries", are naturally interested more in the applied work on drugs, whether synthetics

or plants and they are independent in the matter of finance.

Their economically independent position seems to eliminate particular difficulties. The only item which prove interesting from the point of view of utilisation aspects, the pre-discovery and post-discovery periods are summarised below:-

ADMINISTRATIVE DIFFICULTIES :-

(1) Import of Chemicals :- Both the centres have an import of chemicals, which works to about a couple of lacs every year. CIBA also needs import of equipment and maintenance service, which comes to another 3 lacs. Their work will be facilitated if they get this import.

(2) Organisation of clinical Research :- Both of them organise clinical research through the help of the different hospital institutions in the country. They do not have any particular complaints except the inevitable delays in this type of work.

It may be noted at this stage that the clinical research work on drugs undertaken by the pharmaceutical industries in other countries is very costly. They have to incur the various costs connected with some payments to the investigators as well as compensations to the patients. Owing to the absence of such practices in the country, the cost of clinical trials

in India is much less as compared with other countries. It is worthwhile thinking, if it would be possible to give some impetus and reduce delay by undertaking some such arrangement in India on a small scale.

The problem of the official arrangement of clinical trials for certain well tried imported drugs, through the agency of I.C.M.R. needs some further consideration. No doubt, there is a necessity of an official hand in this work. However, it may be worthwhile considering, if the trials could be arranged by the drug control department directly with the help of the full time departments of medicine recently coming up in the various medical colleges. This is merely a suggestion which needs further study.

(3) Government-non-official-Sector-relationship :-

The relationship between the official sector of research and the official administration on the one hand and such big research centres under industries with export component on the other, do not appear to be unsatisfactory. In view of their economic independence in all respects and huge set-ups, the points of contact with the administration in general and drug control in particular are few in number and quite often there is no reason for any strain in the mutual relationships. The relationship is more co-operative in nature.

Group (b) :

The group 'b' consists of 2 institutions, the Indian Drugs Research Association, Poona and the Medical Research Centre in Bombay, which can be taken as a representative samples of the group 4 in Category 'B' viz. 'Non-official scientific societies, associations and trusts". The Indian Drugs Research Association Poona is an organised registered scientific society working in the field of medical research in general and drugs in particular, including the work connected with Indian Systems of medicine for the last 20 years and more. This may be the only example of its kind, wherein scientific men of various disciplines connected with medical research have voluntarily come together to contribute their energy and knowledge for the advancement of medical sciences in general and drugs in particular. The medical research centre at Bombay organised by Dr. S.A.E. Hakim works on the resources of a small ancestral trust of Dr. Hakim himself, supplemented by the expenditure from his personal income in addition. Both these example represent the labour of love out of initiative and interest of the medical scientists, who are not employed in any official sector.

Owing to the very nature of these scientific societies, they are interested in both, fundamental and applied work. The examples serve to illustrate

the non-official independent scientific opinion in the country. Both of these centres have to depend for financial resources, either on the public or on the Government or on their own pockets. They naturally have to struggle against all kinds of difficulties, both financial and otherwise. Owing to the financial dependence with consequent meagre economic resources they find it very difficult to maintain the work in hand, which is often delayed or sometimes has to be abandoned with the overwhelming difficulties. The cases given in this study illustrate many such obstacles they have to face and still maintain the work. Their difficulties are summarised below will throw some light on many problems of national interest and would also reflect on the Government policies in the country.

Administrative difficulties :-

The difficulties are discussed under the following four main heads :-

- (1) Imports;
- (2) Organisation of research;
- (3) Govt. -non-official-sector-relationship; &
- (4) Grants.

(1) Imports :- Usually these institutions need much less import as compared with the first group. They may need some apparatus not manufactured in the country or a few chemicals required in the work. They find it

very difficult to secure even the small import, owing to the procedures they have to pass through and also owing to the delays in granting licenses. This is illustrated by one case wherein small import licence of about Rs.3000/- only also took about a couple of years.

(2) Organisation of Research :-

(a) No Non official scientific institutions of this kind can ever be self-sufficient entirely.

Moreover, in medical research dependence on the other institutions and scientific disciplines becomes a necessity. The attitude of the individual scientists working in the official institutions does count in this matter. In many cases, the attitude is not unsatisfactory with a proper approach. But the limitations imposed on them by the policies are sometimes awkward. A case is presented in the case of one of the institutions, (I.D.R.A.) which shows that the Minister concerned had to be approached to rectify the unnecessary limitations imposed by the administration, on the co-operation extended by the Government officers and the department.

(b) In the case of solvents needed, such as the rectified spirit and absolute alcohol, the present law is unnecessarily highly dilatory and taxing to such institutions. In fact, this being a daily necessity of this work, the same would suffer for

want of them, or the work will be unnecessarily delayed in their absence.

(c) The third and the most important point in connection with organisation is, the attitudes of the policy-makers and administration towards the technological advances presented by such societies in respect of some trade groups, who would be benefitted by that with simultaneous advantage to the public consumer. The examples, which reflect on these attitudes are presented by both the institutions. One of them (Indian Drugs Research Association) has been struggling to bring the appropriate methods of standardisation in the field of Ayurvedic drugs since 1948. The attitude of the policy makers has been peculiar in the sense that they never denied the merit of the reform necessary in the interests of public health. In fact, they haphazardly tried to implement it and also encourage halfheartedly the work of the institution connected with this problem. On the other hand, they could never fully convince the trade interests in the matter or over-rule them with the inevitable displeasures, they would incur. This attitude has proved useful to save the unhealthy interests in the field of such trade as well as hinder the scientific advance of the trade and benefit to the healthy medical practice in the country. The entire history in this connection

extending over the last 20 years, cannot be presented in this limited case-study.

Similar obstacle of policy had to be faced by the other institution (Medical Research Centre) at Bombay in the matter of ^{the} application of the new technological development, which could be easily used, in the prevention of adulteration of the widely used food material by a known toxic substance. In this case also, there is an unhealthy trade interest on one side, the policy-makers with a number of laws, such as the prevention of food-adulteration act on the other. The pure objective scientists, who struggles right from his work to its application in the interest of public good is sometimes partly encouraged and has ultimately to face the displeasures from both the sides.

It should be noted that the struggle is only against the unhealthy profit motive and not the profit motive itself. The scientists will be unable to support the profit motive by unhealthy means. The scientists, who had to face these dilemmas had to suffer mentally, as well as in the progress of their work and it is highly essential for policy-makers to take steps in more objective fashion both in the interests of public good and scientific advance in the country.

(d) It has been pointed out already that the efforts of these non-official bodies have been maintained by public funds. The change in the economic position during the last decade after independence, with the Government fiscal policies as they are, has been generally detrimental, to the healthy collection of funds as pure charities.

of public charities, the diversification of interests from region to community, the constant drain of politics on public purse and the present attitudes of the trading communities are not quite congenial to the collection of straight-forward donations for a purpose like pure scientific work. Under such conditions, it is a problem before such scientific societies how to function in future. Their efforts to approach the Government are also fraught with many difficulties, which will be discussed under the third heading.

(3) Govt. Non-official-sector-relationship :- Quite contrary to the comparatively happy relationship, disclosed by the research under Pharmaceutical industry with a few points of contact with the Government; the relationship between non-official scientific societies and individuals, on the one hand and the Government sector on the other, are sometimes strained. It was definitely assumed in the Government plans that all

possible help should be taken from the non-official and voluntary sources in public life in each and every field to achieve the objectives of the welfare state. Instead of this, the Government plans, supported by huge budgets, tried to eliminate the brains and efforts created by labour of love by many selfless workers in the country. But it now appears to be a common experience of many non-official workers and institutions in the different fields of national activity that their work and opinions are not only neglected but conditions are created by which it will be difficult for them to function in any particular field. This attitude of the Government had led to unnecessary obstacles in the progress of work in the country.

The long standing voluntary work of an established reputation usually can achieve results more quickly and also economically in that particular field as it is a labour of love of these workers. The voluntary efforts lay more emphasis on work and less on the monetary gains, either from the work or made available to the workers, while the Government administration and policies emphasize budgets, expenditures and jobs more than the outcome or performance in the field with economy. Plans are, therefore,

laid out, which ^{was} / inconsistent with quick work and economy. Such plans are useful to multiply buildings, offices and jobs.

In fact, the planning assumes the selection of the best probability of achieving results with economy under the given set of circumstances in the country with different probabilities. In the absence of this realisation, it becomes less realistic in nature with a competition to raise the budgets and expenditures. On the top of it, as the expenditure is taken as a criterion of achievements of performance in any field by the Planning Commission, it helps this attitude to grow.

It is likely that this state of affairs might vary to a certain extent from one field to another, depending upon the persons and conditions. But there does not appear to be any basic difference in the general attitudes of the policy-makers.

As an alternative, Government policy always favours to take up every activity in the Government sector, with a usual consequence that the work is delayed, becomes much more costly, helps the job-hunters and vested interests and on the top of it, quite often becomes less efficient except in a few cases. But this alternative fits into the present

attitude of the policy-makers as well as the service-sectors. The term 'public-sector' is usually used in the limited sense of industrial enterprises of the Government. There also, the same story exists for such industries in the public sector. The distinction based on the assumption that socialistic pattern can be brought about quickly by this policy is questionable. It is highly unreasonable to assume that every-body outside the sphere of the Government service sector, is non-patriotic and selfish. It was once exactly the opposite. The fundamental defect responsible for selfishness and irresponsible attitude is the general lack of national spirit and character, which is similar all over. It is, therefore, necessary to pick up men and women of devoted spirit and public character and entrust responsibilities on them in all possible fields. Labours of love and initiative should be really encouraged and such persons should be allowed to partake in the activity of nation building to the maximum.

It is unfortunate that there is no categorisation of non-official efforts in the different fields of public interest, from the point of view of their quality assessment. The unhealthy trade interests,

the many mushroom societies newly arising in the fields of public welfare without standing or any valuable work at their credit, and purely scientific societies carrying out pure research work at a great cost to themselves, are all grouped into one big category of non-official institutions and work. The attitudes of the administration towards all such bodies are similar. Particularly the attitudes towards the bodies, which seek Government funds, are far from congenial. One of the reasons possible lies in the policy that the Government wants to step in every field of public welfare and bring all activities under the Govt. sector. The other possible reason is possibly, the want of any categorisation in the non-official fields of work with quality as the basis. Owing to this attitude of lumping together all the new and immature efforts with the well established and long standing works of merit in every field, the outlook of administration on all of them is similar in its content. They all will be looked upon as untrustworthy and would be considered as requiring enforcement of unnecessarily complicated rules and bonds, which ultimately lead to the 'frustration of work rather than encouragement'.

It can be seen from the case histories of two non-official scientific societies that the work

was actually interrupted more than once, chiefly owing to the inability of the policy makers and administration to overcome the unhealthy trade interests in the field in which scientific advance would have been useful. The scientists had to pursue the problem on their own. This does not mean that the policy-makers and administrators were not sympathetic to the scientists. The fact stands that they simply could not help the scientist in a particular field where the trade interests were concerned.

In the particular fields of work of these institutions, connected with foods and drugs, it is necessary to understand that grave dangers to public health were involved. Moreover, the healthy trade interest would not have suffered with the application of scientific technological developments in the respective fields. In view of these facts, it is necessary to consider how the difficulties of policy can be eliminated in the administration.

Another point emerges out of the study of these institutions that the scientist ^{concerned} had to waste a good deal of their energy, time and money only to bring these facts to the notice of the policy-makers and administration. The change in the

office, both Ministerial and Secretarial, is inevitable in the democratic set-up in any country. However, it is necessary to see that the facts once established regarding institutions and men have not to be re-established every few years. Under the present state of affairs this becomes necessary for such scientists and the progress of work has ultimately to suffer in the respective fields.

Some arrangement therefore, may have to be found out, to continue the work and policies once established, in spite of the changes in the office.

(4) Grants :- Out of the two institutions only one could receive grants from the Government. The other, Medical Research Centre could not even ^{secure} / grant from the body like the I.C.M.R., inspite of the facts that the scientist approached for the same and his work in the field could not have been questioned. The reasons for non-acceptance of the proposal are not known to the proposer.

In the case of the other institution, the grants were received with great effort. Quite often the work on the problem could not be continued further for the simple reason that the grant was not meant for that particular purpose. The grants were received very late during the financial year, and

that necessarily affected the performance. Research projects on short term and long term basis must be formed according to the merit of the case and the investigator should not be stranded in the month of March every year for continuation of work.

Recently new conditions are being imposed on the scientist and institutions for the grant they receive. One such condition is the execution of a personal bond from the head of the institution with two securities in the matter. This type of condition, on the established scientific societies of repute, is highly detrimental to the scientific advance in the country. Moreover, it would also be impossible for them to get securities for lack of rupees. Hardly any scientist in the non-official sector is likely to have a personal property, which would amount to the size of the total grants. In the presence of these facts, it is worthwhile finding out any alternative procedure, so that the scientific work in this field will not suffer. Such conditions are being applied to all kinds of non-official institutions, irrespective of the field of work and its quality. Policy makers should take into consideration that there are already very few scientific men and societies of repute. The present procedures of grants

are already not satisfactory from the point of view of work. This additional procedure will ultimately prove harmful to the progress of scientific development in the country, in general and this field in particular.

Based on these observations on the various items given above, the following tentative recommendations are formed for further consideration.

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Tentative Recommendations :-

- (1) An effort may be made to survey the full scope of work of medical research in the country as outlined on page
- (2) The Government policies need reconsideration in the light of the facts stated in connection with the non-official scientific societies and individuals of established standards and repute, with a view to facilitate the work of their interests and initiative. Since the scientific resources of personnel is very limited, full use of these non-official sector must be made for scientific advance.
- (3) It is necessary to categorise the non-official institutions in different fields of national welfare and medical research in particular from the point of view of their quality and performance assessment.
- (4) Such institutions once categorised for their remarkable performance may then be fully assisted by the Government so that the scientists concerned need not have to spend time and energy on convincing again and again the new set-ups in the Government.

- (5) In case of such institutions and individuals, the unnecessary elaborate conditions of bonds etc. should be reduced to the minimum or eliminated.
- (6) In the case of organised and well conducted scientific societies duly registered under concerned acts - such Societies are likely to be very few in medical research a separate consideration may be given on the lines of the industrial research associations, which are financed by the C.S.I.R. The I.C.M.R. may also take this view into consideration.
- (7) All the non-official sectors must not be lumped together. The purely scientific societies in non-official sectors must necessarily be treated on a different level than the group of unhealthy trade interests in non-official sectors. The policy to bring the elementary as well as the highly technical fields under the Govt. sector, which is called 'Nationalisation' may not prove very helpful in the purely scientific fields and particularly medical research. The full use of the existing non-official sector must be made for the scientific advance of the country. This may also lead to some economy without any

prejudice to efficiency. Research ultimately is the function of brain and capacity to pursue the work irrespective of difficulties. This is the basic need of research to transform the well-conceived idea and observation into a result. It is necessary to render all assistance and encouragement, wherever such persons are found, irrespective of the official or non-official sector. The non-official scientific person has found himself in a great difficulty owing to these general policies adopted by the Government towards the non-official sector on the one hand and many vested interests on the other. Unless the Government helps him to render the service, he is rendering on his own, such type of men have ultimately to disappear from the field of medical research.

The full utilisation of their efforts is necessary in the interests of public good and further communications of the results achieved upto the general consumer in the country. The general consumer is naturally ignorant in respect of such technical matters and hence the responsibility of the Government increases to see that he gets the maximum benefit of the scientific advance.

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